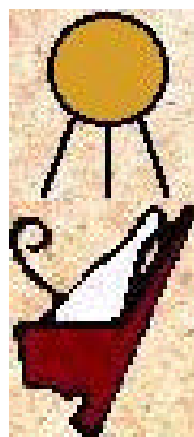




Overview of US Army Deployable Photovoltaic Analysis



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Purpose

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To provide an overview and update of CAA studies on deployable photovoltaic systems in the Army.

Analysis of Deployable Applications of PV in Theater (ADAPT): Findings

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504th Parachute Infantry Regiment
82nd Airborne Division
Fort Bragg, NC

"Devils in Baggy Pants"



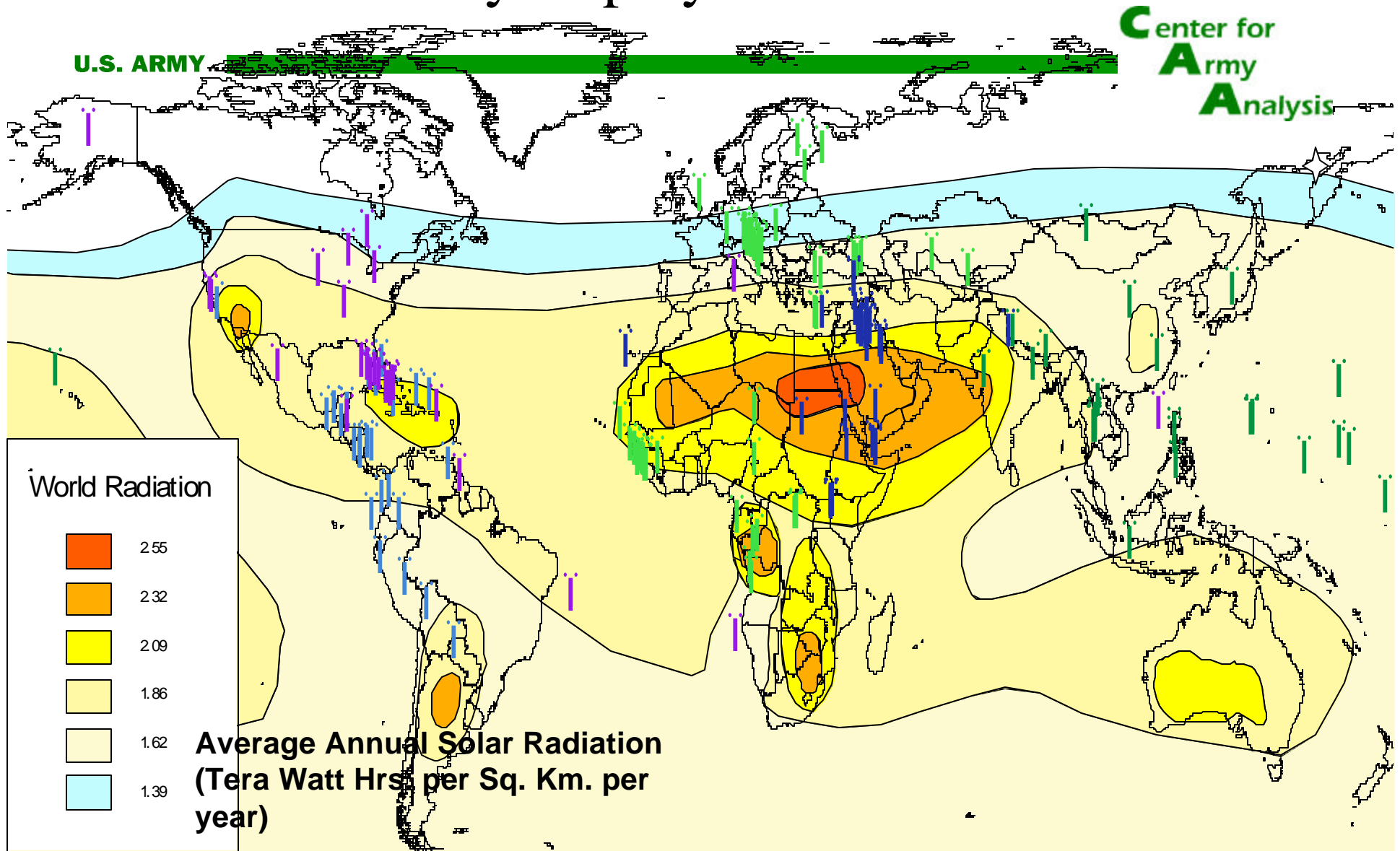
This unit examined a photovoltaic power station in a field and simulated field environment. The bottom line is this system with some modifications *can be used to provide the primary power* source for a Battalion sized Airborne Infantry Tactical Operation Center.



Commo Platoon AAR
Dated 21 APR 99

- Operational Readiness; Met 80% of Power Load Requirements, tactically quiet
- Economically Feasible
- Saves energy and prevents pollution

U.S. Military Deployments: 1989-1999



Two-thirds of Smaller Scale Contingencies (SSCs) have been in regions with solar conditions equal to or better than Ft. Bragg

Army Photovoltaic (PV) Systems Demonstration Prototypes

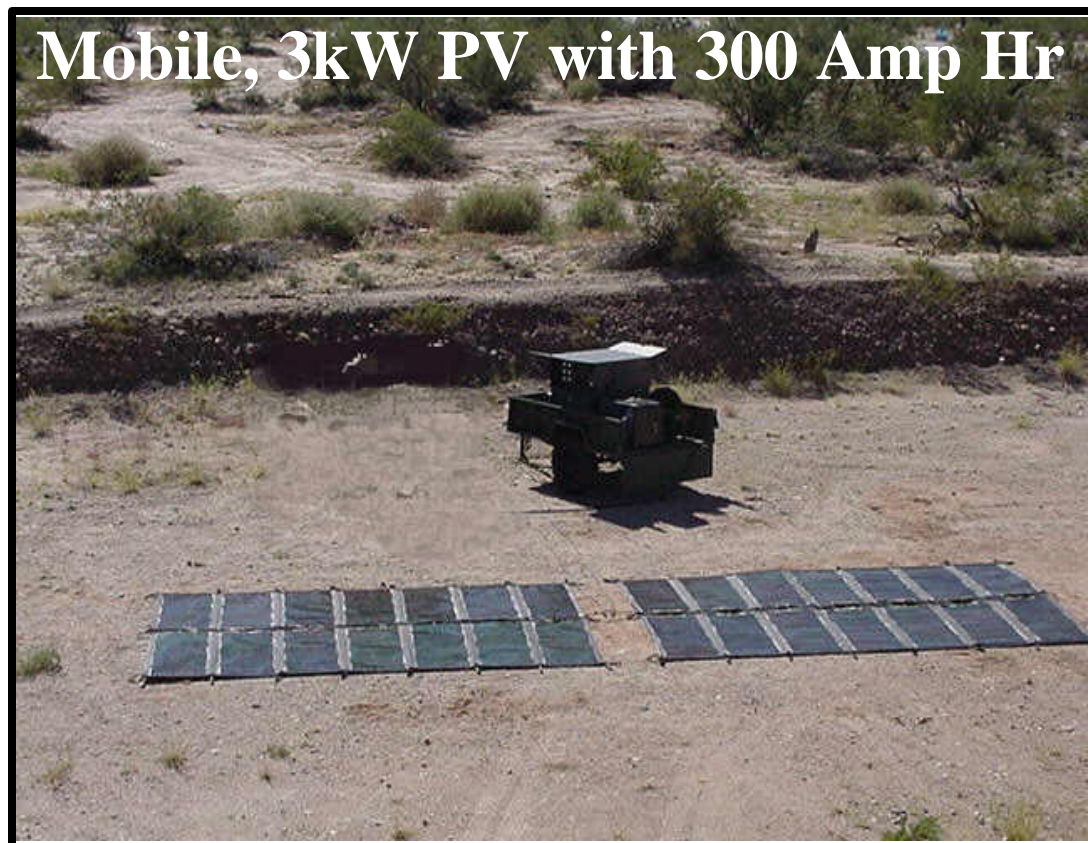
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As a result of the Analysis of Deployable Applications of Photovoltaics (ADAPT), deployable PV generators have been acquired for Army demonstration and analysis at Ft. Bragg (plus deployments), Europe and Hawaii

PV Analysis:

- Operational
- Economic
- Environmental
- Energy



Renewable Energy Analysis for Strategic Responsiveness (REASR)

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REASR will provide a cost / benefit analysis of deployable PV systems to include an assessment of logistics footprint, strategic responsiveness and operational readiness.

Sponsors and Players:

- Deputy Chief of Staff for Logistics
- Assistant Chief of Staff for Installation Management
- XVIII Airborne Corps
- Army Materiel Command (Science Advisor) US Army Europe and 7th Army
- Defense Advanced Research Projects Agency

REASR Pacific RIM 2000 (RIMPAC)

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RIMPAC 2000 was a joint & combined military exercise which employed the 1st prototype, US Army Photovoltaic Generator during the period 10-16 June, 2000 - Hilo, HI

- PV System provided 75% of power requirement over 5 day period (compares with 80% levels experienced at Ft. Bragg)
- Lessons Learned from RIMPAC that Changed PV Design (implemented during summer, 2000) – PV weight and spacial footprint reduced by 50%

Logistics Footprint Assessment (2 Major Theater War Example)

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	WEIGHT	CUBES
Fossil Fuel Generator Case	126,650 short tons	3.1×10^7 cubic feet
Decrease Fossil Fuel Generators by 20%	- <u>101,320 short tons</u> 25,330 short tons	- <u>2.5×10^7 cubic feet</u> $.62 \times 10^7$ cubic feet
Replace Fossil Fuel Generator decrement of 20% with PV (include fossil fuel generator back-up)	18,340 short tons	$.60 \times 10^7$ cubic feet

In this example, PV would reduce footprint by 7,000 short tons and 200,000 cubic feet.

Concluding Remarks

- Photovoltaic systems can complement generators in the near term as a source of electricity in the Army sustaining base and for deployments
- Analysis of PV should consider operational, economic, environmental and energy criteria